DRAFT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

DATE: February 4, 1991

SUBJECT: Work Plan for L.E. Carpenter Enhanced Immiscible Product Recovery System

TO: Nicoletta DiForte
Northern New Jersey Section II
New Jersey Superfund Branch II

FROM: Frederick J. Luckey, Geologist
Technical and Pre-Remedial Support Section
Program Support Branch

I have developed the following comments on the January 18, 1991 work plan for "An Enhanced Immiscible Product Recovery System" for the L.E. Carpenter & Co. Site in Wharton, New Jersey. The reports that have been developed to date have all tended to not fully represent the nature and extent of site-related contamination. There also appear to be serious QA/QC problems that have not been fully considered in the text. In my opinion EPA should not provide any written form of approval of these studies, considering that a number of technical issues appear to be unresolved, without reserving the right to request additional confirmatory sampling in the future if necessary. EPA's approval of these documents at this time in their present may result in future problems should this site become an EPA-lead. However, the proposal to proceed with an interim remedy to address the floating product on top of the water table is appropriate and can proceed without the need for additional data collection and/or the revision/review of earlier documents. One problem that may impact the effectiveness of this interim remedy is that the extent of floating product appears to be underestimated which may result in the development of an undersized floating product recovery system. Please contact me at extension 6786 if I may be of further assistance.

GENERAL COMMENTS

1) It would appear that there are some serious sampling QA/QC problems which have negatively impacted the ability of these sampling results to fully characterize the site> These problems include:

a) "Masking Effect" - Given the fact that certain contaminants such as xylene occur at levels of hundreds of thousands parts per billion, the laboratory detection limits for other volatile organics and base neutrals had to be significantly elevated when analyzing these samples (see Attachment A). As a result the

detection limits for many volatile organics may be orders of magnitude in excess of MCLs. This sampling problem is simply not discussed in any of these reports. The reports should acknowledge this "masking effect" and try to develop some way of dealing with this problem.

b) Analytical QA/QC Problems - Holding times for volatiles have been exceeded for a number of samples (Attachment B). Some of the inorganic samples should be regarded as highly suspect because the laboratory apparently has no record of when these samples were analyzed (Attachment C). Due to this discrepancy there is no way that one can determined if the analytical equipment was calibrated, if it passed calibration QA/QC or if any other sampling protocols were followed. Given these apparent problems, EPA should be aware of the fact that some of the data that has been collected to date may not be appropriate to base EPA decisions on.

2) Hydrogeologic Relationship between the River and the Aquifer System - Groundwater flow maps that have been presented to date suggest that there is virtually lateral flow from the shallow aquifer to the river or vice versa. This would appear to be truly remarkable! In my opinion it would be highly unlikely that there is no interaction between these two systems. Conditions may change seasonally depending on groundwater/river levels. The question of the hydraulic connection between the aquifer system and the river should be regarded as an open question.

3) Extent of Floating Product - The maps that have been presented to date appear to underestimate the potential extent of floating product. For example, Figure 2-1, which shows the extent of floating product, neglects to indicate that a significant thickness of floating product is present at the location of Monitor well MW-1 some over 200 feet west of the indicated edge of the floating product boundary. No wells and/or test pits which encounter the water table have been installed between these two points. Is there any reason to expect that the product <u>does not extend to MW-1?</u> How many sources of floating product are there on this site? If there is only one main source area <u>is there any reason to expect that floating product does not extend to MW-1</u>. Furthermore, Figure 2-1 does not show the product as extending to MW-2, which has been documented several times to contain floating product.

<u>SPECIFIC COMMENTS</u>

Page 2, Section 1.2, Second to Last Paragraph - The word "identified" should be replaced with the word "placed". What types of "tenant business" are on-site? Do these "tenant business" use, store and/or produce hazardous substances? Does EPA have this information? EPA should be aware of these details of these operations so that we can determine if these operations

may be new sources of contamination.

Page 6, Second Paragraph - This paragraph should be deleted. The objective of this paragraph is to understate the groundwater contamination at this site:

- How has it been determined that groundwater in the vicinity of the site is not heavily used? Where do all of the homes near the site get their drinking water? A NJDEP well permit search does not constitute a thorough review of all groundwater wells in the area. NJDEP well permits would only be available for relatively new wells. There appears to be relatively large residential areas to the south and southeast. Given the extremely high levels of some volatile organics at the site, particularly xylene, it is not inconceivable that these contaminants, if left unchecked, could migrate a considerable distance from the site and may effect distant groundwater wells.

- Why is a reference made to contaminated wells nearly one mile away from the site? What relevance does this have?

- The statement that no TCE has been detected in any of the 27 monitoring wells does not mention the fact that the extremely high levels of xylene at this site resulted in TCE detection limits that in some cases exceeded MCL levels.

Page 7, First Paragraph - What is the likely source (i.e., storage tank or lagoon) that would have provided the bulk of this product to the subsurface. If the floating product is believed to be mostly hydrocarbon it should be relatively easy to identify the source if the various underground storage tanks were used for specific products.

PAge 7, Second Paragraph - The discussion of the composition of the floating product should mention the potential "masking effect" of the high levels of xylenes on other volatile organics that may be present at lower levels.

Figure 2-1 - The boundary of the floating product appears to be highly speculative. In particular the long "finger" of product that is indicated to extend to the east ignores the fact that floating product has been observed in MW-2 to the north and is based on insufficient data to the south. The western extent of the floating product is unknown although it is certain that a considerable thickness of product has been observed at MW-1 (this fact is not indicated or suggested on this figure). The fact that a considerable thickness exists at MW-1 leads one to suspect that the lateral extent of this product will also be significant.

Page 18, Second Bullet Item, Future Sampling Consideration - When

wells with floating product such as MW-1 and MW-3 are sampled quarterly, are they purged before sampling? If so the sampling results are not really representative of the actual levels of contamination in the subsurface. I would suggest that samples be taken of the floating product before purging if this is not already being conducted.

Page 21, Last Paragraph - Boulders should not be considered a problem. Drilling techniques exist which can easily handle the boulders. Obviously a large number of wells have already been installed without major difficulties.

Figure 3-4 - The indicated location of the trench would not control floating product that has been identified north (MW-2) and east (TP-88) of the proposed trench locations. Also, the trench would not immediately address contamination in the vicinity of MW-1.

PAge 32, Recommendation, first sentence - The phrase "will be implemented" should be changed to "is recommended". The remedy has not yet been selected and when it is it will be the regulatory agencies, not the PRP, who will do so.

Figure 4-1 - The proposed number of additional recovery wells would not seem to adequately address the lateral extent of the problem considering the fact that this is a passive collection system.It would seem that more recovery wells would be needed south and west of the infiltration pond. The extent of the floating product in the vicinity of MW-1 should be determined after which an appropriate number of recovery wells can be determined for the MW-1 area.

Page 36, top of page - What is meant by the phrase "will allow for 5 feet of drawdown". In particular, what is the reference water level elevation that is being referred to here? Is this the lowest or the highest water level elevation that has been observed at each proposed well location?

RECOMMENDATIONS

1) I am in full agreement with proceeding with an interim action at this site to recover pure phase product floating on the water table. It should be made clear to the PRP that this is an interim remedy, not a final one. **In my opinion, they are not recommending a sufficient number of product recovery wells to adequately address the probable extent of floating product.**

2) EPA should not give a written acceptance of this and previous reports' interpretations of the nature and extent of site-related contamination given the numerous QA/QC problems with the sampling results as well as the less than complete characterization of

site-related contamination. If due to program considerations some form of EPA approval is required, EPA should qualify any approval with a requirement that more reliable sampling results will be obtained in the future before a final determination of site-related contamination can be made. There is always the possibility that the state may hand the site back to the Superfund program at some time in the future.

3) The extent of floating product should be revised to reflect the known occurrences of floating product as well as the significant data gaps that remain. In particular, additional borings should be installed to define the extent of floating product between the infiltration pond and MW-1 before the final product recovery design is finalized or as part of the remedial action.

4) The masking effect of the extremely high levels of xylenes on the other volatile organics that may be present at this site should be addressed. The numerous QA/QC problems which seriously limit the usefulness of this data should be presented in all reports which refer to these past sampling results.

5) Given the significant masking effect of the high levels of xylene, all future analytical tables should cite "non-detects" as "ND" followed by the actual laboratory detection limit for each volatile organic analysis. This is the only way that regulatory staff will be able to determine if the detection limits are below MCL levels for each contaminant. The analytical tables in past documents provide no hint of the very serious problem that exists with regard to extremely high detection limits.

6) The fact that benzene was detected in air samples but not in groundwater water samples is puzzling. Perhaps the masking effect of the xylene might explain why benzene has not been detected in groundwater.

7) The nature of the "tenant businesses" on-site should be explored.

SOILS (Includes Hand Auger and Test Pit Samples)

		Method Detection Limit
VO+15	22 samples	6 - 14 ppb
	27 samples	8.3 - 49 ppb
	13 samples	10 - 60 ppb
	2 samples	19 - 130 ppb
	2 samples	160 - 1500 ppb
	10 samples	580 - 2900 ppb
	2 samples	640 - 4300 ppb
	3 samples	1300 - 7600 ppb +
	4 samples	3000 - 16000 ppb +
	2 samples	6200 - 31000 ppb +
	2 samples	12000 - 60000 ppb +
	5 samples	29000 - 180000 ppb +
	2 samples	59000 - 320000 ppb +
	1 sample	150000 - 770000 ppb +
	Total 97 samples	

		Method Detection Limit
BN+15	23 samples	340 - 1900 ppb
	5 samples	740 - 3700 ppb +
	6 samples	1500 - 44000 ppb +
	7 samples	2400 - 12000 ppb +
	3 samples	4300 - 8900 ppb +
	5 samples	6500 - 19000 ppb +
	13 samples	12000 - 270000 ppb +
	5 samples	23000 - 10000000 ppb +
	6 samples	38000 - 120000 ppb +
	22 samples	100000 - (+)1000000 ppb +
	Total 95 samples	

		Method Detection Limit
PCBs	11 samples	9.2 - 200 ppb
	6 samples	20 - 560 ppb +
	4 samples	37 - 890 ppb +
	6 samples	49 - 1400 ppb +
	1 sample	97 - 1900 ppb +
	3 samples	150 - 3100 ppb +
	2 samples	230 - 5800 ppb +
	1 sample	970 - 19000 ppb +
	Total 34 samples	

NOTE : + - Sample diluted.

ATTACHMENT A

GROUNDWATER

		Method Detection Limit
VO+15	16 samples	5 - 25 ug/l
	1 sample	50 - 250 ug/l
	1 sample	100 - 500 ug/l
	2 samples	250 - 1200 ug/l
	1 sample	1000 - 5000 ug/l
	Total 21 samples	

		Method Detection Limit
BN+15	15 samples	10 - 62 ug/l
	1 sample	25 - 120 ug/l
	1 sample	40 - 200 ug/l
	2 samples	67 - 330 ug/l
	1 sample	85 - 420 ug/l
	1 sample	660 - 3300 ug/l
	Total 21 samples	

		Method Detection Limit
Priority Pollutant Metals	21 samples	.0002 - .05 ug/l

		Method Detection Limit
PCBs	21 samples	.05 - 1.0 ug/l

		Method Detection Limit
Hydrocarbon	1 sample	.5 mg/l
Fingerprinting	1 sample	10 ug/g (oil)
	Total 2 samples	

		Method Detection Limit
Phenolics and	21 samples	.01 mg/l
Cyanide	21 samples	.01 mg/l
	Total 42 samples	

NOTE: This table does not include results for wells MW-14s, 14i, 14d nor the production well. These wells were sampled on October 24, 1989, final lab results are pending.

ATTACHMENT A (CONT.)

TABLE E-1

EXCESSIVE SAMPLE HOLD TIMES

SAMPLE TYPE	VOLATILES	SEMIVOLATILES
Test Pits	3B, 25, 48, 63, 64, 65, 66 67, 71 and 75	2A, 2B, 5A, 5B, 6A, 6B, 7A 7B, 8A, 8B, 50A, 50B, 51B 52, 53, 54, 72, 73, and Field Blanks for 3/23/89, 3/29/89, 4/7/89, and 4/10/89
Hand Auger	1 and Field Blank for 3/28/89	None
Monitor Wells	3, 11i, 13s and Field Blank for 9/20/89	MW-1
Surface Water	1, 2, 3, 4, 5 and 6	None
Sediments	None	None

ATTACHMENT B

full round of groundwater sampling completed in January 1990 or to the data from the planned supplemental RI sampling which is to include river and drainage ditch water samples and additional soil samples near TP-2, TP-3, and TP-50.

It should also be noted that holding times for priority pollutant metals could not be checked because the laboratory did not report analysis dates. However, since the holding time for metals is six months and the results, were received within six months, no holding times are believed to have been exceeded.

Xylene Analysis

The samples collected during the early portion of the Remedial Investigation were not analyzed for Xylenes as a target compound. These include volatile organics analysis for test pits 1-33, all Hand Auger samples, surface water, and stream sediments samples. All groundwater samples, and test pits 39-79 included xylene as a targeted analyte. Xylene present in earlier samples was still detected but reported as a tentatively identified (non-targeted) compound which are quantitated by the laboratory differently than targeted compounds. Data tables in the revised Remedial Investigation report have included xylene in list of volatile organics and in the sum of targeted volatile compounds.

ATTACHMENT C